CHALLENGE OF BUILDING INFORMATION MODELLING (BIM) IMPLEMENTATION IN MALAYSIA AEC INDUSTRY

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STUDENT'S DECLARATION

I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

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ABSTRAK

Pemodelan maklumat bangunan (BIM) adalah konsep termaju untuk majoriti syarikat yang beroperasi dalam industri AEC. BIM menyediakan paradigma baru untuk mereka bentuk, membina, mengendali dan menyelenggara kemudahan. Walaupun dengan penggunaan khusus, pihak terlibat boleh mengalami kesulitan semasa pelaksanaan projek atau dalam organisasi. Industri AEC di Malaysia sangat menarik dan pelaksanaan teknologi baru dan sistem pembinaan telah menjadi perhatian utama bagi pihak yang terlibat. Oleh itu, kajian ini bertujuan untuk mengenal pasti unsur-unsur yang mencabar pelaksanaan BIM dalam industri AEC Malaysia. Tiga puluh lima cabaran dengan pelaksanaan BIM telah dikenalpasti dan kebanyakan faktor boleh dikaitkan dengan unit organisasi. Data telah diuruskan melalui soal selidik dan menumpukan faktor-faktor tersebut adalah untuk membantu pihak terlibat yang utama untuk menangani isu-isu seperti keperluan mereka melaksanakan masa dan kewangan dengan pelaksanaan BIM dalam industri AEC Malaysia.

ABSTRACT

Building information Modelling (BIM) is an advanced concept for the majority of companies operating in AEC industry. BIM provide a new paradigm to design, construct, operate and maintain a facility. However, even with the dedicated use, stakeholders can go through into troubles during its implementation on a project or within an organization. The AEC industry in Malaysia is very compelling and the implementation of new technological advancements and construction systems has been a major concern for the stakeholders. Therefore, the study aims to identify the elements challenging of implementation of BIM in Malaysian AEC industry. Thirty-five challenges with BIM implementation were identified and most of the factors could be correlated with the organization unit. The data has been managed through designed questionnaires and the prioritization of such factors is relied upon to help the main stakeholders to address the issues as per their need which will spare parcel of time and financial with implementation if BIM in Malaysian AEC industry

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%	Percentage

LIST OF ABBREVIATIONS

BIM	Building Information Modelling
AEC	Architecture Engineering Construction
PWD	Director of the Public Works Department
CIDB	Construction Industry Development Board
CITP	Construction Industry Transformation Program
SMEs	Small and Medium Enterprises
GSA	General Services Administration
PBS	Public Building Service
IFCs	Industry Foundation Class
CPCF	Construction Productivity and Capability Fund
CORONET	Construction and Real Estate Network
NATSPEC	National Specification
CRC-CI	Corporate Research Centre for Construction Innovation
ANZRS	Australian and New Zealand Revit Standards
ROI	Return on Investment
CIMP	Construction Industry Master Plan
RII	Relative Importance Index

CHAPTER 1

INTRODUCTION

1.1 Introduction of Research

Construction is the process of constructing a facility, building or infrastructure. Construction process requires a lot of team working and involvement of many parties. The construction industry is usually known to be one of the most challenging industries in many countries. This study explains about Building Information Modelling, which one of the mediums used by companies to smoothly manage and command projects. BIM is a model defining the physical and the functional characteristics of a facility in a digital representation (Azhar et. al.,2008). The concept of Building Information Modelling is to build a building in a virtual environment before its actual physical construction so that problems along with their potential impacts expected to be encountered during actual construction stage can be worked out and analyzed in advance (S. Azhar et al., 2011).

Nowadays, most of the developed countries use this medium in their construction industry field. For example, Australia is the leading country in implementing BIM (18-75%) followed by the United States (31%), Europe (16%), the Middle East countries (11%) and India (9%) that shown in Figure 1. Inferable from expanded awareness about its points of benefits, AEC industry companies in Malaysia start to use this medium in their projects.

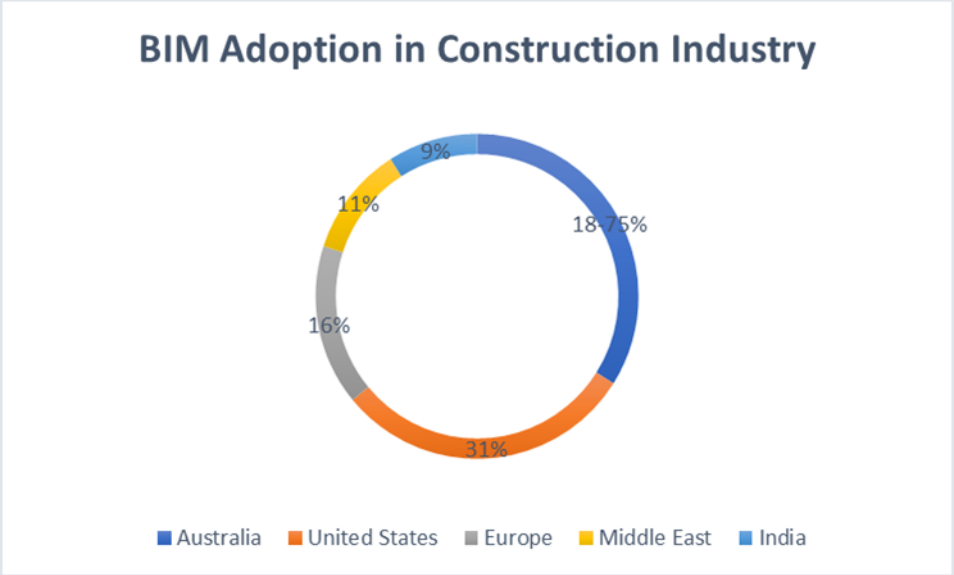

Figure 1.1: Countries that use BIM (Sawney, 2014)

The progress of BIM in Malaysia has been operated by the private sector since 2009. The suggestion to implement BIM in Malaysia was initiated by the Director of the Public Works Department (PWD) in 2007. The first government project to use this BIM medium methodology was announced in 2010. BIM implementation need the development of dependable tools for information exchange between various software tools while authorize efficient and direct coordination and monitoring processes between project participant and team members.

The construction industry of Malaysia is very competitive in quality. The country is progressing with a vision 2020 and the AEC industry in a crucial element of this vision. The implementation of new technological advancements and construction medium has been prime concerns for its stakeholders. However, the implementation of BIM in such competitive industry is observed to be restricted and its implementation has not been as rewarding as it should have been. Although, there is now a deliberate concern about this technology and the industry professional are realizing the potential benefits of BIM. This study is being regulated to emphasize some of the factors that are specifically affecting the implementation of BIM in Malaysian AEC industry.

1.2 Problem Statement of this Research

The AEC industry in Malaysia need to catch up with the pace of another development countries that already used this BIM medium in their construction project. Malaysia is still moving slowly with the implementation of BIM in the AEC industry. Chief executive of The Construction Industry Development Board (CIDB), Datuk Ahmad Asri Abdul Hamid has suggested the compulsory use of BIM in project sectors by 2020. This move was to emerged the digital implementation by industry specialist as Malaysia was set to begin the fourth industrial revolution 4.0.

The proposition is under the Construction Industry Transformation Program (CITP), yet we have not decided the (implementation) period in light of the fact that the acknowledgment is as yet not wide going despite the fact that we have presented the utilization of BIM. In the construction sector, BIM has proved to be a valuable technique that helped professionals reduce uncertainties and successfully execute a project. BIM can be used from planning to operation at all phases of the construction process. Unfortunately, implementation of BIM is very slow in the Malaysian construction industry. This study is conducted to identify the factors challenging the implementation of BIM in Malaysian AEC industry (Gardezi et al., 2014).

The next generation of construction specialists will be train in several universities through collaborating with CIDB that consisted of technical training and communication skill. The implementation of such innovative and new technologies is a necessary for companies to remain competitive and be able to deliver projects in a timely and cost-effective manner and this change needs to happen quickly and at scale.

1.3 Objective of Research

The aim of this research to know the factors challenging the implementation of BIM in Malaysian AEC industry. In order to achieve that objective, the following objectives have been identified:

- To collect and analyses data from company respondents.
- To puzzle out the factors that challenges the implementation of BIM in Malaysia AEC industry.

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